Voluntary Markets Encounter Cap and Trade: Silver Bullet? Stake to the Heart?

Source: GE Wind Energy

Presentation for:

Tenth National

Green Power Marketing Conference

October 25th, 2005

Austin, TX

Presentation by:

Rob Harmon

Vice President

Renewable Energy Programs

Bonneville Environmental Foundation

BONNEVILLE ENVIRONMENTAL FOUNDATION

Voluntary Market is Growing Rapidly

- Estimated Green Power Sales by Market Segment, billion kWh

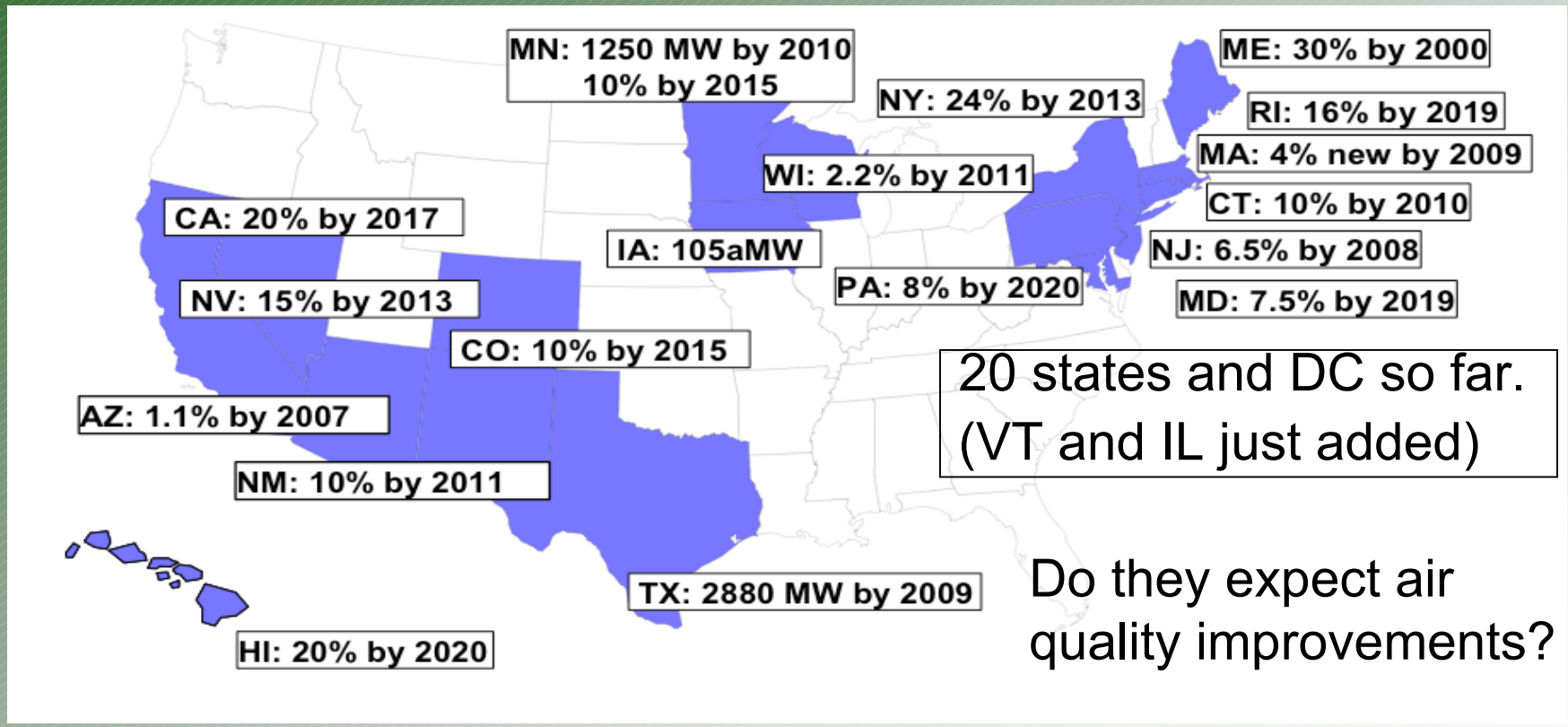
	2003	2004	% Growth
Utility Green Pricing	1.3	1.8	43%
Competitive Markets	1.9	2.6	40%
REC (Green Tag) Markets	0.7	1.7	162%
Retail Total	**3.9**	**6.2**	**62%**

From NREL - 10/05. Totals may not add due to rounding.

BONNEVILLE ENVIRONMENTAL FOUNDATION

Compliance Markets Growing Rapidly

States with RPS Standards



As of 2003, mandates and RPS policies have built 2,325 MW of new renewable capacity. (EIA data)

BONNEVILLE ENVIRONMENTAL FOUNDATION

Big Growth - Why?

- By 2010, NREL expects the annual Green Tag market to equal $700-900 million
- What do voluntary customers and regulators believe they are getting?

BONNEVILLE ENVIRONMENTAL FOUNDATION

Voluntary Market Expectations

- HSBC Bank (7th largest US Purchaser) - “today its US banking unit announced that it has offset a substantial quantity of its carbon emissions by purchasing 45,454 MWh of clean, wind energy certificates.”

-Press release

BONNEVILLE ENVIRONMENTAL FOUNDATION

EPA (3rd largest US Purchaser)

- "EPA estimates that as a result of these purchases… 462,751,671 pounds of CO_2 emissions will be avoided— the equivalent to removing 40,345 cars from the road for an entire year.

- EPA Web site (7/05)

(http://www.epa.gov/greeningepa/greenpower.htm)

BONNEVILLE ENVIRONMENTAL FOUNDATION

GSA (5th largest US Purchaser)

- "Electricity produced from renewable resources reduces the amount of CO_2, a key greenhouse gas, as well as sulfur dioxide (SO2) and nitrogen oxides (NOx) into the atmosphere."

-Press release

BONNEVILLE ENVIRONMENTAL FOUNDATION

Johnson and Johnson

(2nd largest US Purchaser)

- "We are committed to to achieving substantial reductions in CO_2 emissions through… such off-site means as purchasing green power and trading carbon emissions credits."

-Company web site

BONNEVILLE ENVIRONMENTAL FOUNDATION

Starbucks

(22nd largest US Purchaser)

- "…announced today that it has committed to purchase wind energy certificates… The purchase is part of a multi-faceted…strategy to reduce greenhouse gas emissions…"

-Press release

BONNEVILLE ENVIRONMENTAL FOUNDATION

Tennessee

- Governor Phil Bredeson, announcing a Green Power purchase - "…increased use of green power lessens impacts on the environment, which is especially important to help improve air quality in Tennessee."

-Press release

BONNEVILLE ENVIRONMENTAL FOUNDATION

World Bank

- Announcing a Green Power purchase - “This purchase … is equivalent to eliminating the carbon dioxide emissions of more than 10,000 cars for a year…”

-Press Release

BONNEVILLE ENVIRONMENTAL FOUNDATION

American Wind Energy Assoc.

- "Wind energy is one of the cleanest energy sources available - protecting air quality and reducing global warming pollution, while also conserving our natural resources…"

Press release (7/05)

BONNEVILLE ENVIRONMENTAL FOUNDATION

Cap and Trade - Blessing or Curse?

- Current cap and trade mechanisms for SO_2 do not allow renewables to create reductions in SO_2.

- The government grants (essentially) all SO_2 allowances to about 250 large (existing) power plants.
  - There were some allowances set aside for renewables, but the program was poorly designed.
  - These allowances are <u>assets</u> that the emitters <u>will</u> utilize.

BONNEVILLE ENVIRONMENTAL FOUNDATION

Current System (#s are for example only)

1,000 GWH

(SO_2 Allowances Capped at 1,000 = 1,000 Tons)

1,000 Allowances (Tons)

Government

Old, Coal Plant

500 Tons

500 Tons

1,000 GWH

Elect. Grid

Result

1,000 GWH

1,000 Tons of Pollution

BONNEVILLE ENVIRONMENTAL FOUNDATION

Current System

Add 500 GWH with "Clean" Natural Gas

(Allowances Remain Capped at 1,000)

1,000 Allowances (Tons)

Government

500 Tons

250 Tons

Coal Plant

puts in 1 scrubber

Sells 250 allowances

250 Tons

"Clean" gas plant

1,000 GWH

500 GWH

Elect. Grid

Result

1,500 GWH

Still 1,000 Tons of Pollution

BONNEVILLE ENVIRONMENTAL FOUNDATION

Current System

Add 500 GWH with Wind

(Allowances Remain Capped at 1,000)

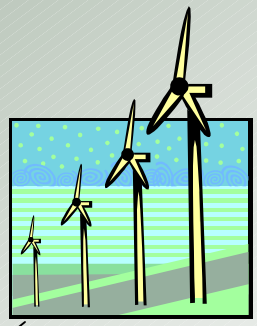
Government

1,000 Allowances

500 Tons

500 Tons

Coal Plant **makes no changes**



1,000 GWH

500 GWH

Elect. Grid

Result

1,500 GWH

Still 1,000 Tons of Pollution

BONNEVILLE ENVIRONMENTAL FOUNDATION

The Risk

- If the SO_2 model is adopted for other pollutants (i.e.CO_2), renewable energy facilities will not be able to make environmental claims regarding those pollutants

BONNEVILLE ENVIRONMENTAL FOUNDATION

There Are Alternatives

BONNEVILLE ENVIRONMENTAL FOUNDATION

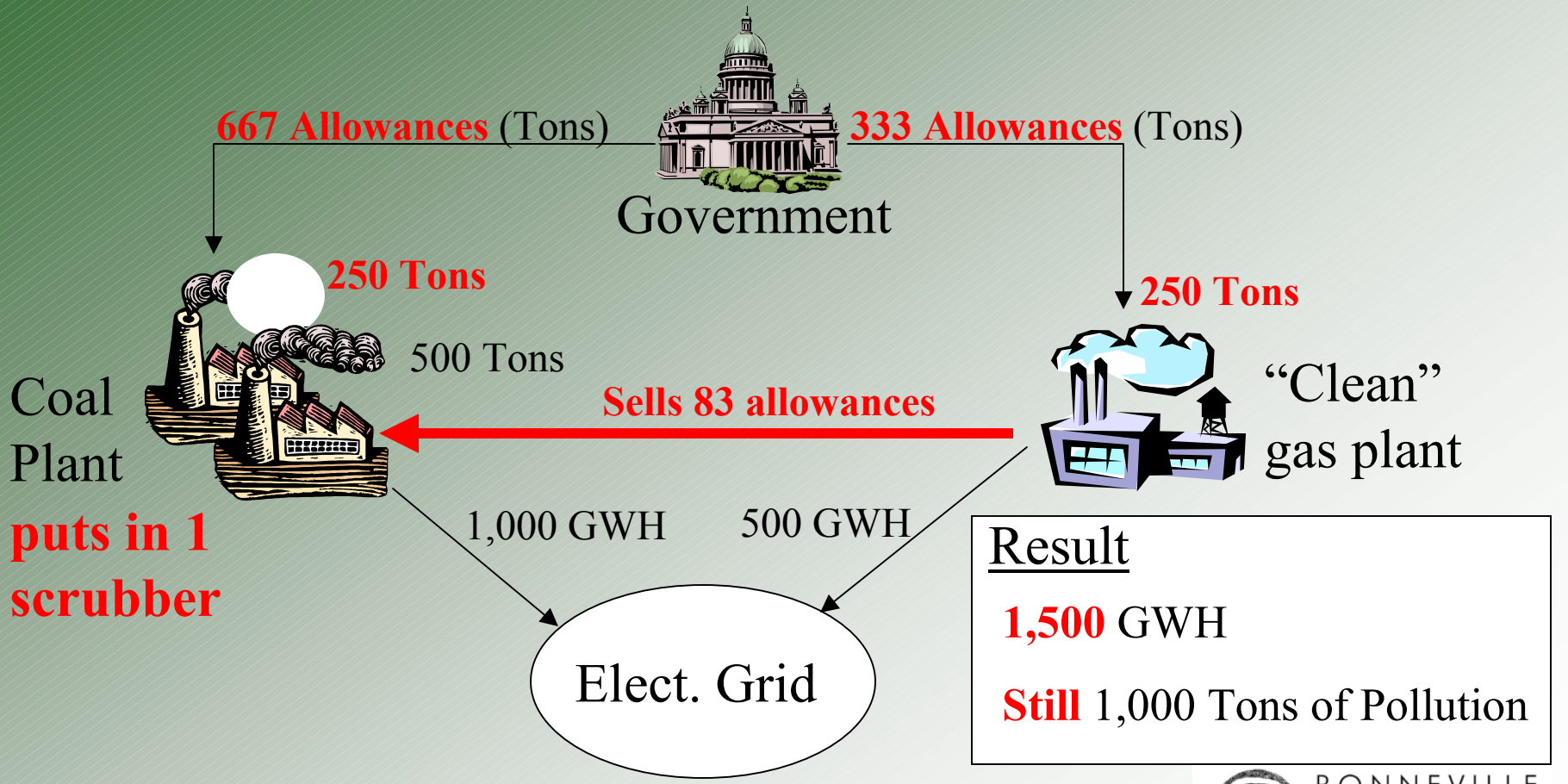
The Alternatives

- Alternative #1: An output-based cap and trade system
  - Electricity producers are allocated allowances based on their percentage contribution to the grid (MWHs)
    - If you put 10% of the power into the grid, you receive 10% of the allowances
- Alternative #2: Allowance Set-Aside for New Renewables
  - Legislators or regulators set aside a certain number of allowances for new renewable facilities (and/or DSM) and new installations apply for the allowances
- Alternative #3: Load-Based Cap and Trade & Reductions for Voluntary Purchases
  - Allowance are allocated to retail electricity sellers (utilities)
  - Voluntary purchases lower the cap

BONNEVILLE ENVIRONMENTAL FOUNDATION

Output-based System

Add 500 GWH with "Clean" Natural Gas (Allowances Remain Capped at 1,000)



Result

1,500 GWH

Still 1,000 Tons of Pollution

BONNEVILLE ENVIRONMENTAL FOUNDATION

Output-based System

Add 500 GWH with Wind

(Allowances Remain Capped at 1,000)

Or, they can **sell allowances to emitters**. (No pollution reduction results.)

Government

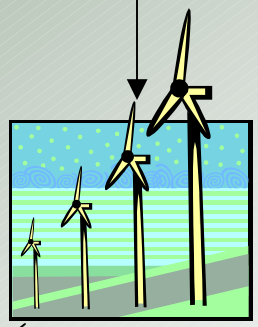
667 Allowances (Tons)

333 Allowances (Tons)

250 Tons

417 Tons

Coal Plant **puts in 2 scrubbers**



Sells **333 Allowances** As "Green Tags" (RECs). Allowances **Retired**.

1,000 GWH

500 GWH

Elect. Grid

Result

1,500 GWH

667 Tons of Pollution

BONNEVILLE ENVIRONMENTAL FOUNDATION

Set-Aside System

Add 500 GWH with Wind

(Allowances Remain Capped at 1,000)

Government

700 Allowances (Tons)

300 Allowances (Tons)

250 Tons

450 Tons

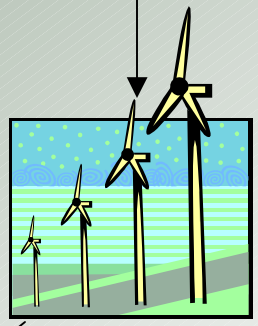
Coal Plant

Increases efficiency or buys allowances from those who can

1,000 GWH

500 GWH

Elect. Grid



Sells **300 Allowances** As "Green Tags" (RECs).

Allowances **Retired**.

Or, they can **sell allowances to emitters**. (No pollution reduction results.)

Result

1,500 GWH

700 Tons of Pollution

BONNEVILLE ENVIRONMENTAL FOUNDATION

How are Allowances Retired?

Allowances are retired when:

- They are used to cover actual emissions
- They are “used” to make claims regarding:
  - “Greenness”
  - “Green Power or Green Tag” purchases
  - Emissions offsets or reductions

BONNEVILLE ENVIRONMENTAL FOUNDATION

The Problem with Generation-Based Allowance Systems

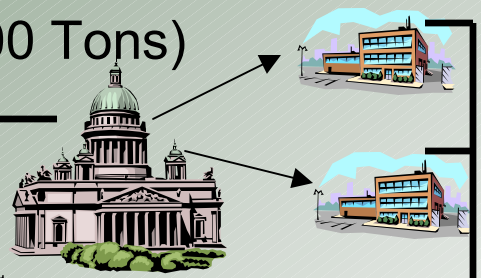
- They are designed for national CO_2 cap and trade systems
- The NE and the West Coast are pursuing regional cap and trade for CO_2
- If you cap regional CO_2 generation, you will:
  - Raise the cost for regional generators
  - Encourage regional utilities to buy (dirtier) power from outside the (capped) region
- Not politically palatable on a regional basis

BONNEVILLE ENVIRONMENTAL FOUNDATION

Load-Based (or "Performance-Based") Cap & Trade (#s are for example only)

1,000 GWH

(CO_2 Allowances Capped at 1,000 = 1,000 Tons)



Government

350 Allowances (Tons)

Equivalent activity

Coal Plant

300 Tons

300 GWH

Utility "A"

Coal Plant

50 Tons

50 GWH

Utility Load

350 GWH

Result

1,000 GWH

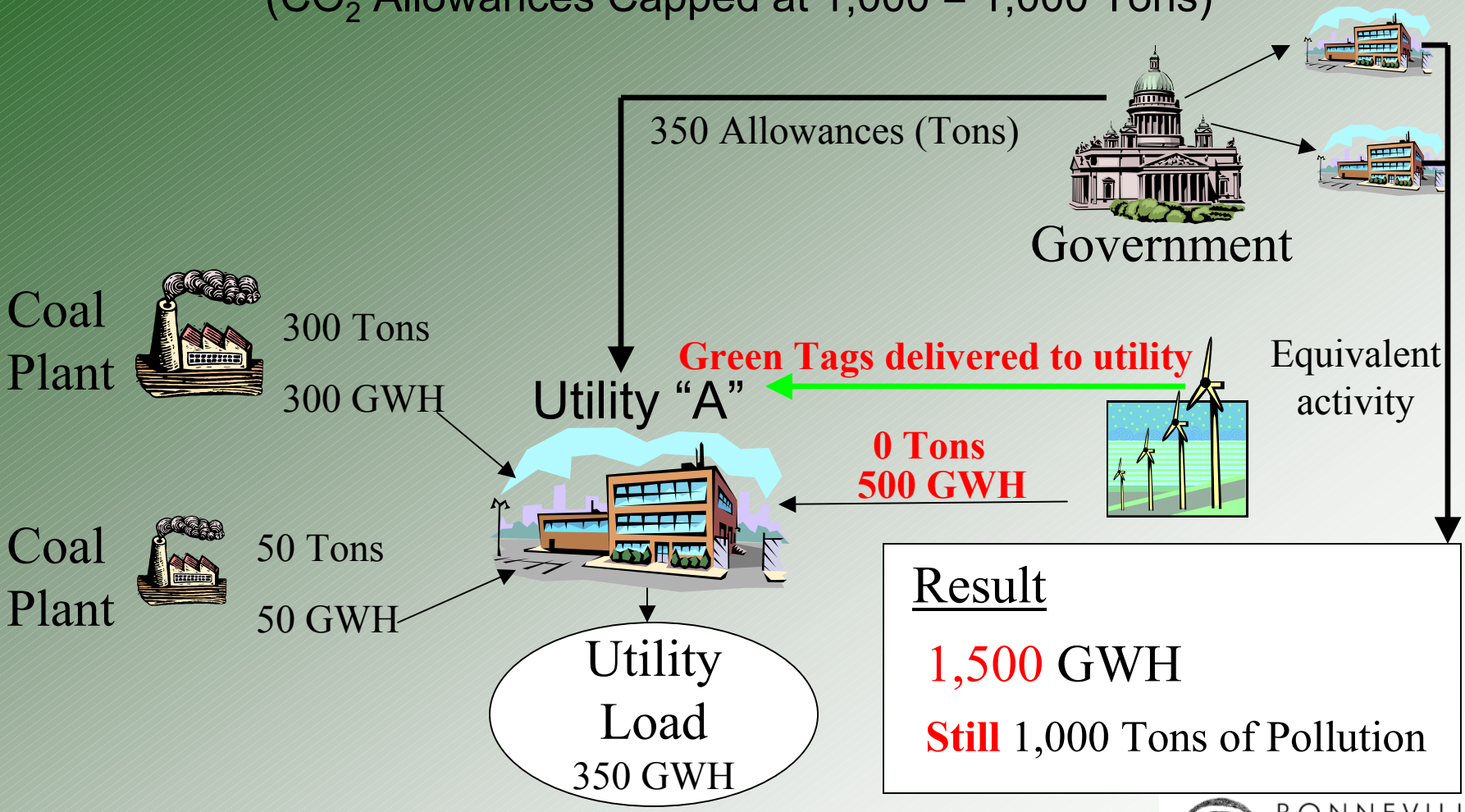
1,000 Tons of Pollution

BONNEVILLE ENVIRONMENTAL FOUNDATION

Load-Based Cap & Trade (#s are for example only)

Add 500 GWH with Wind

(CO_2 Allowances Capped at 1,000 = 1,000 Tons)



BONNEVILLE ENVIRONMENTAL FOUNDATION

Adding Voluntary Purchases to Load-Based Cap & Trade

When voluntary purchases are made:

- Wind farm will sell utility "system power" which has emissions defined by regulators.
  - Likely the emissions characteristics of the marginal MWH.
- The utility must then take other actions to reduce its emissions to ensure compliance with the cap.
- The voluntary purchases reduce the amount of CO_2 by the calculated amount.
- Voluntary customers can make claims.

BONNEVILLE ENVIRONMENTAL FOUNDATION

Conclusions

- Both customers in the voluntary market and regulators passing RPS standards expect that the new renewable energy added to the grid will improve air quality
- SO_2-style cap and trade regulations eliminate the ability of those parties to achieve those goals
- Under a cap and trade system, the only way to reduce air pollution for the associated pollutant is to reduce the number of allowances
- Without the ability to claim air quality improvements, the demand for new renewable energy will likely be seriously reduced
- There are alternatives to the SO_2-style cap and trade system that are much more beneficial to renewables

BONNEVILLE ENVIRONMENTAL FOUNDATION

Bonneville Environmental Foundation

133 SW Second Avenue, Suite 410
Portland, OR 97204
http://www.B-E-F.org

Rob Harmon
Vice President
Renewable Energy Programs
(206) 463-4986
RobHarmon@b-e-f.org

GREEN TAGS

BONNEVILLE ENVIRONMENTAL FOUNDATION

Rob Harmon - Bio

- Robert Harmon serves as Vice President of Renewable Energy Programs for the Bonneville Environmental Foundation (BEF), where he is credited with developing BEF's Green Tag program, which began in 1999. In 2004, Rob was awarded the national Green Power Pioneer Award for his efforts to build a thriving and credible Green Tag market in the United States.

- Rob has worked in the fields of energy productivity and renewables since 1987. He previously held positions as Vice President of Marketing and Business Development for WindLite Corporation and as Business Development Manager for FloWind Corporation.

- He has served as the Chairman of the American Wind Energy Association's Small Wind Turbine Committee, and as a member of the California Emerging Renewables Advisory Board. He currently serves on the Board of the Northwest Energy Coalition and on the Advisory Board for the Environment & Alternative Energy Cluster Working Group of the Puget Sound Regional Council.

BONNEVILLE ENVIRONMENTAL FOUNDATION